

What is claimed is:

1. An OFDM demodulation method comprising:

processing for receiving an OFDM packet including a preamble and a following data transmission symbol, in which packet a subcarrier interval of the preamble is set wider than the subcarrier interval of the data transmission symbol;

processing for estimating a DC offset occurring at a receiving side by using the received preamble;

processing for correcting the DC offset on the received data transfer symbol, based on the estimation result of the DC offset; and

processing for demodulating the DC offset corrected data transmission symbol.

2. The OFDM demodulation method according to Claim 1, further comprising

processing for correcting a frequency offset of the received preamble, in which the DC offset is estimated by using the frequency offset corrected preamble.

3. The OFDM demodulation method according to Claim 1, in which

in the DC offset estimation processing, low pass filtering processing is performed on the received preamble with a passband narrower than the subcarrier interval of the preamble.

4. The OFDM demodulation method according to Claim 1,  
in which

in the DC offset estimation processing, low pass filtering processing is performed on the frequency offset corrected preamble in situation that arbitrary time of getting a maximum output value of an oscillator for use in the frequency offset correction is set at zero and that a period of time is set at a range of  $-T$  to  $T$ , with a passband narrower than the subcarrier interval of the preamble.

5. An OFDM demodulation method comprising:

first processing for receiving an OFDM packet in which a subcarrier interval of a preamble is set wider than the subcarrier interval of a data transmission symbol;

second processing for estimating a frequency offset by using the received preamble and supplying a frequency offset estimated value;

third processing for correcting the frequency offset on the received preamble, according to the frequency offset estimated value;

fourth processing for estimating a DC offset by using the frequency offset corrected preamble and supplying a DC offset estimated value;

fifth processing for correcting the DC offset on the data

transmission symbol, according to the DC offset estimated value;

sixth processing for correcting the frequency offset on the DC offset corrected data transmission symbol, according to the frequency offset estimated value; and

seventh processing for performing OFDM demodulation on a result of the sixth processing.

6. The OFDM demodulation method according to Claim 5, in which

the fourth processing includes integral filtering processing.

7. A semiconductor integrated circuit device for receiving and demodulating an OFDM packet including a preamble and a following data transmission symbol, in which packet a subcarrier interval of the preamble is set wider than the subcarrier interval of the data transmission symbol, the device comprising:

a DC offset estimating unit for estimating a DC offset occurring at a receiving side by using the received preamble;

a DC offset correcting unit for correcting the DC offset on the received data transmission symbol, according to the estimation result of the DC offset; and

a demodulating unit for demodulating the DC offset corrected data transmission symbol.

8. The semiconductor integrated circuit device according to Claim 7, further comprising:

a frequency offset correcting unit for correcting a frequency offset of the received preamble, in which

the DC offset correcting unit estimates the DC offset by using the frequency offset corrected preamble.

9. The semiconductor integrated circuit device according to Claim 7, in which

the DC offset estimating unit includes a low pass filter for passing the received preamble with a passband narrower than the subcarrier interval of the preamble.

10. The semiconductor integrated circuit device according to Claim 8, in which

the DC offset estimating unit has a low pass filter for passing the frequency offset corrected preamble in situation that arbitrary time of getting a maximum output value of an oscillator for use in the frequency offset correction is set at zero and that a period of time is set at a range of  $-T$  to  $T$ , with a passband narrower than the subcarrier interval of the preamble.

11. A semiconductor integrated circuit having a

frequency offset estimating unit, a frequency offset correcting unit, a DC offset estimating unit, and a DC offset correcting unit, for receiving and demodulating an OFDM packet in which a subcarrier interval of a preamble is set wider than the subcarrier interval of a data transmission symbol: in which

the received OFDM signal is supplied to the frequency offset estimating unit, so to estimate a frequency offset and supply a frequency offset estimated value,

the received OFDM signal is supplied to the frequency offset correcting unit, so to correct the frequency offset according to the frequency offset estimated value and supply a frequency offset corrected signal,

the frequency offset corrected signal is supplied to the DC offset estimating unit, so to estimate a DC offset value and supply a DC offset estimated value, and

the frequency offset corrected signal is supplied to the DC offset correcting unit, so to correct the DC offset according to the DC offset estimated value.